

Claims

1. A light clock, comprising:
  - (a) a light pulse transmission device having a light pulse entry point and a light pulse exit point;
  - (b) a light pulse source for generating a light pulse into the light pulse entry point;
  - (c) a light pulse detector for detecting the light pulse at the light pulse exit point and providing an output signal upon light pulse detection; [and]
  - (d) a counter which is incrementally increased upon receipt of the output signal of the light pulse detector; and
  - (e) wherein the light pulse detector comprises at least two light pulse detectors at separate points along a light pulse path in the light pulse transmission device with a first light pulse detector providing a light pulse detector initiation signal and a second providing a light pulse detector output signal and the counter is incrementally increased with a time difference between the first light pulse detector initiation signal and the second light pulse detector output signal.
15. A light clock, comprising:
  - (a) a light pulse transmission device having a light pulse source entry point;
  - (b) a light pulse source for generating a light pulse onto the light pulse source entry point;
  - (c) a light pulse amplifier within the closed loop for amplifying the light pulse;

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- (d) a light pulse detector for detecting the light pulse within the closed loop and providing an output signal upon light pulse detection; [and]
  - (e) a counter which is incrementally increased upon receipt of the output signal of the light pulse detector; and
  - (f) wherein the light pulse transmission device is a closed loop fiber optic cable of a known length and wherein the light clock further comprises a fiber optic tap/splitter as the light pulse source entry point.
24. A light clock, as in Claim [16] 15, wherein the light clock further comprises a fiber optic tap/splitter within the closed loop for splitting a portion of the light pulse in the closed loop fiber optic cable to the light pulse detector.
27. A light clock, as in Claim [16] 15, wherein the light pulse source is a pulse laser.
28. A light clock, as in Claim [16] 15, wherein the light pulse source is a pulsed laser having a wavelength of 1550 nanometers.
29. A light clock, as in Claim [16] 15, wherein the light pulse amplifier comprises:
- (a) a first wavelength division multiplexing device having inputs of the light pulse from the closed loop fiber optic cable and an amplifying light to a combined output of the light pulse and the amplifying light;
  - (b) a second wavelength division multiplexing device having an input of the combined light pulse and the amplifying light and outputs of the light pulse, now amplified, to the closed loop fiber optic cable and the amplifying light; and
  - (c) a rare earth doped fiber optic cable connecting the output of the first wavelength division multiplexing device to the input of the second wavelength division multiplexing device.

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